Selected aspects of modernization in CEE Region

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Rzeszów University Press

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Publikacja finansowana w ramach programu Ministerstwa Nauki i Edukacji
Doskonała Nauka II – Wsparcie konferencji naukowych pod nazwą
"Central European Congress of Modernization. History Media Culture"
Kierownik – dr Jarosław Kinal
Okres realizacji: 1.10.2023–30.09.2025
Dofinansowano ze środków budżetu państwa
Instytucja finansująca – Ministerstwo Edukacji i Nauki
Nazwa programu: Doskonała Nauka II – Wsparcie Konferencji Naukowych
Wartość projektu – 243 400,00 PLN
Wartość dofinansowania – 218 900,00 PLN

ISBN 978-83-8277-258-6 (print)
ISBN 978-83-8277-266-1 (online publication)

DOI: 10.15584/978-83-8277-266-1

2190

WYDAWNICTWO UNIWERSYTETU RZESZOWSKIEGO
35–959 Rzeszów, ul. prof. S. Pigonia 6, tel. 17 872 13 69, tel./faks 17 872 14 26
e-mail: wydawnictwo@ur.edu.pl; https://wydawnictwo.ur.edu.pl
wydanie I; format B5; ark. wyd. 16; ark. druk. 16; zlec. red. 27/2025

Druk i oprawa: Drukarnia Uniwersytetu Rzeszowskiego

Zenonas Norkus
(Vilnius University)

Aelita Ambrulevičiūtė
(Vilnius University)

The Economic Growth Performance of Lithuania During the Great Depression in the 1930s in the Regional Cross-Country Comparison[1]

Abstract

This contribution presents new findings of the research on the Gross Domestic Product (GDP) of Baltic countries in the interwar period, which allows for the first time to compare the impact of the Great Depression in the 1930s on the output of Baltic economies (Estonia, Latvia, Lithuania) and neighbor countries with similar historical legacies (being parts of the Russian empire), structures of economy and level of development (Finland and Poland). For the last two countries, data from the Maddison Project Database are used, where GDP data on Poland are available only for 1929–1938. So, according to our data, among the five countries under comparison, real GDP *per capita* contracted most in Poland, decreasing in 1932 to 78.3% of the 1929 level and recovering to this level only in 1938. Latvia was next by recession depth, followed by Estonia and Finland. Surprisingly, there was no real output contraction in Lithuania despite the deflation which was as deep as in Poland. Zooming in on Lithuania's case, we advance several hypotheses (to be tested in further research) to explain this deviant case: 1) there was no economic boom in Lithuania before the GD; 2) Lithuanian economy was most closed (controlling for size); 3) in 1930–1932 Lithuanian economy implemented a mini-industrialization program, conducting anticyclical policies.

Keywords: Great Depression (1929–1933), Gross Domestic Product (GDP), Baltic countries, Finland, Poland, economic growth of interwar Lithuania

[1] This research has received funding from the Research Council of Lithuania (LMTLT), agreement No S-VIS-23-15.

Wyniki wzrostu gospodarczego Litwy w okresie wielkiego kryzysu w latach 30. XX wieku w regionalnym porównaniu międzynarodowym

Abstrakt

W artykule przedstawiono nowe wnioski z badań Produktu Krajowego Brutto (PKB) krajów bałtyckich w okresie międzywojennym, które pozwalają po raz pierwszy porównać wpływ wielkiego kryzysu lat 30. XX wieku na produkcję gospodarek bałtyckich (Estonia, Łotwa, Litwa) i krajów sąsiadujących o podobnej spuściźnie historycznej (byłe części Imperium Rosyjskiego), strukturze gospodarki i poziomie rozwoju (Finlandia i Polska). W przypadku dwóch ostatnich krajów wykorzystano dane z bazy Maddison Project Database (MPD), gdzie dane o PKB Polski dostępne są jedynie za lata 1929–1938. Zatem według naszych danych spośród pięciu porównywanych krajów realny PKB na mieszkańca skurczył się najbardziej w Polsce, obniżając się w 1932 roku do 78,3% poziomu z 1929 roku, a powracając do tego poziomu dopiero w 1938 roku. Następna pod względem głębokości recesji była Łotwa, a za nią Estonia i Finlandia. Co zaskakujące, na Litwie nie doszło do realnego spadku produkcji pomimo tak głębokiej jak w Polsce deflacji. Koncentrując się na przypadku Litwy, stawiamy kilka hipotez (do sprawdzenia w dalszych badaniach), aby wyjaśnić ten odbiegający od normy przypadek: 1) przed wielkim kryzysem na Litwie nie było boomu gospodarczego; 2) gospodarka litewska była najbardziej zamknięta (po uwzględnieniu wielkości gospodarki); 3) w latach 1930–1932 gospodarka litewska realizowała program miniindustrializacji, prowadząc politykę antycykliczną.

Słowa kluczowe: wielki kryzys (1929–1933), Produkt Krajowy Brutto (PKB), kraje bałtyckie, Finlandia, Polska, rozwój gospodarczy międzywojennej Litwy

Introduction

The great global economic crisis of the 1930s (to be referred to as the Great Depression; GD) punctured interwar European and world history. Recently, there was a new surge of interest in the GD not only in economic history but also in the mainstream macroeconomic research focused on the current economic challenges in the advanced Western economies. The reason was the coming of the Great Recession (GR) in 2008–2010, which was broadly perceived by contemporaries as the imminent reenactment of the GD (Grossman, Meissner, 2010; Eichengreen, 2015).

This contribution aims to advance received knowledge of the GD in Lithuania and neighbor countries, drawing on the recent advances in the measurement of the Gross Domestic Product (GDP) in Lithuania. This allows us to

assess the real impact of the crisis on Lithuania's economy for the first time. At the same time, comparison with most similar cases (countries from the same region) leads to new research questions, which are putatively answered in this contribution. Our research question is: how Lithuania's total output was affected by the GD, and how differences in Lithuania's growth performance from that of neighbor countries can be explained? According to our data, there was no real GDP *per capita* (GDPpc) decrease in Lithuania, and this is the puzzle presented and discussed in this contribution.

Our list of comparator countries includes Finland and Poland. Finland is included because, during the interwar period, it was internationally perceived as the fourth Baltic country due to the legacy of long Russian rule (see e.g. Polson Newman, 1930). This legacy was also shared by Poland. However, it also had the legacy of the rule of other great powers (Austria and Prussia), who participated in the partitions of the Polish-Lithuanian Commonwealth (PLC) in the late 18th state. Because of internal heterogeneity deriving from differences in these legacies and due to its much larger size (in terms of territory and population), interwar Poland is more difficult to compare with interwar Lithuania than with other Baltic countries. However, its inclusion can be justified by the legacy of the PLC (shared historical past by Lithuania and Poland) and by pragmatic consideration that this will make our findings and arguments of interest to a broader (Polish) audience.

We start (in the first section of the main part) by describing sources of GDP data for our country cases and present here findings about their interwar time growth. The second section provides more comparative details on the course of the crisis in Lithuania. In the third section, we provide our hypotheses about the causes of Lithuania's growth during the GD to be tested in future research. The conclusion describes its future directions in more detail.

Data and Findings

The most important evidence of economic crisis is the contraction of output (total GDP and GDP *per capita*; GDPpc), indicated by the negative growth rates. The GD 1929–1933 transformed national accounting from a subject for economists with a special interest to a compulsory task for national statistical offices. In this transmutation, the work of Simon Kuznets in

1931–1934 on the U.S. national income assessment for the period 1929–1932 was pathbreaking, culminating in the publishing of the first official U.S. national accounts in 1934 (Studenski, 1958: pp. 149–150, 455–456). One reason was that it was necessary to map the depth of the crisis to conduct Keynesian macroeconomic management. The emergence of macroeconomics as a separate branch of economics was one of the effects of the GD.

Currently, the growth performance of national economies is closely monitored by several national intergovernmental institutions (World Bank, OECD, Eurostat), publishing GDP estimates every quarter. For an interwar period, the standard source is the Maddison Project Database (MPD). However, the first data point for Lithuania in this source is only for 1973, and the same applies to other Baltic countries. For Estonia, Valge (2003) published GDP estimates comparable with those in the first two releases of the Maddison Project Database (MPD, 2010; 2013) for 1923–1938. They are based on the pioneering work of Janusson (1931; 1937) and Horm (1940) on Estonian national income published in interwar times.

A few years later, Roses and Wolf (2010) published GDPpc figures for Estonia and Latvia in 1922, 1929, and 1938 in the authoritative *The Cambridge Economic History of Modern History*. For Estonia, they are different from Valge's (2003) estimates, although Rose and Wolf knew Valge's work. Recently, both were disputed by Norkus and Markevičiūtė (2019), who provided GDPpc estimates for all three Baltic states for 1913, 1922, 1929, and 1938.

Roses and Wolf (2010) and Norkus and Markevičiūtė (2021) used indirect estimation methods. Roses and Wolf did not disclose their method in the detail necessary to replicate their calculations. Norkus and Markevičiūtė used a method pioneered by Allen (1999). In this method, GDPpc values for countries with insufficient data are derived from the GDP data of the benchmark country and data on real wages and agricultural employment, using urban population data as a proxy. Norkus and Markevičiūtė calibrated their model with data on food self-sufficiency and the comparative labor productivity in the Baltic and benchmark countries.

While this could increase the reliability of their estimates, indirect estimates of GDP are of limited usability. Allowing for cross-national comparisons of the levels of living standards, they are not usable for the fine-grained analysis of productivity variation across industries and regions. This aim can be

best served by estimates produced by direct (production, income distribution, consumption) methods.

Direct measurement of Lithuania's GDP came to a real breakthrough with the publication of the estimate of the GDP of Lithuania in 1937 by Klimantas and Zirgulis (2020). They applied production or gross value added (GVA) accounting method. Using the 1937 estimate as a benchmark, in his later work, Klimantas (2024) compiled output volume indexes for eight economy sectors. These indices are then aggregated into a weighted index for GDP, used to derive GDP values in non-benchmark years at the constant benchmark year (1937) prices. They are converted into Gearly Khamis international $ (GK$ 1990), using purchasing power parities (PPP) with Sweden. So Klimantas (2023) was able to produce annual series of Lithuania's GDP for 1919–1940.

Applying an identical methodology, Norkus, Markevičiūtė, Grytten, Šiliņš, and Klimantas (2024) estimated Latvia's GDP in 1935 as a benchmark year and then, together with Klimantas (Klimantas, Norkus, Grytten, Šiliņš, 2024), produced annual GDP series for 1920–1939 (see also: Norkus, Markevičiūtė, Grytten, Krūminš, 2022). They are presented in Table 1 together with Valge's GDP estimates for Estonia in 1923–1938 and estimates for Finland and Poland from MPD (2013).[2] In later releases, the GDP series for Poland was extended backward to 1410, but the gaps for the 1920s were not closed. So, the possibility to compare the growth performance of Lithuania and other Baltic countries for Poland is limited to 1929–1938. Table 1 presents also annual GDPpc growth rates.

Table 1. GDP *per capita* and annual growth rates in Baltic countries, Finland and Poland, 1919–1940

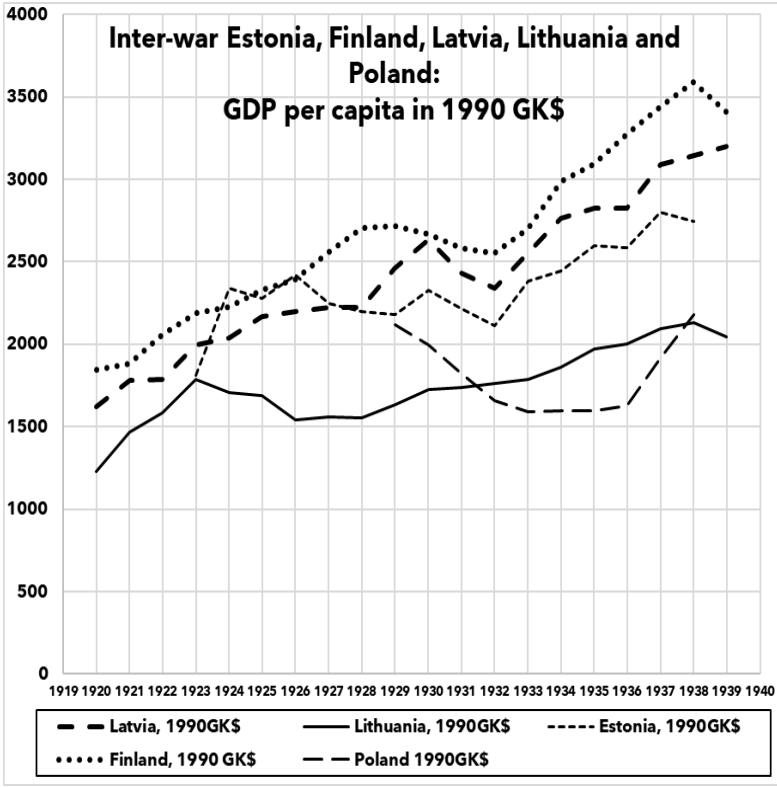
	Estonia		Latvia		Lithuania		Finland		Poland	
Year	GDPpc, 1990int$	Annual growth (%)	GDPpc, 1990int$	Annual growth (%)	GDPpc, 1990int$	Annual growth (%)	GDPpc, 1990int$	Annual growth (%)	GDPpc, 1990int$	Annual growth (%)
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1920	ND	ND	1554	Nd	1187	16.72	1846	11.31	ND	ND
1921	ND	ND	1700	9.40	1416	19.29	1884	2.11	ND	ND
1922	ND	ND	1697	–0.18	1530	8.05	2058	9.21	1382	ND

[2] We use data from the MPD 2013, because in later MPD releases base year shifted, making Valge (2003) data for Estonia incomparable with those for other countries.

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1923	1811	ND	1921	13.20	1725	12.75	2187	6.26	ND	ND
1924	2337	29.04	1946	1.30	1648	–4.46	2224	1.70	ND	ND
1925	2280	–2.44	2084	7.09	1627	–1.27	2328	4.68	ND	ND
1926	2422	6.23	2094	0.48	1489	–8.48	2392	2.73	ND	ND
1927	2249	–7.14	2149	2.63	1503	0.94	2557	6.91	ND	ND
1928	2201	–2.13	2150	0.05	1496	–0.47	2707	5.87	ND	ND
1929	2182	–0.86	2349	9.26	1577	5.41	2717	0.35	2117	ND
1930	2330	6.78	2538	8.05	1665	5.58	2666	–1.88	1994	–5.81
1931	2219	–4.76	2316	–8.75	1675	0.60	2581	–3.19	1823	–8.58
1932	2110	–4.91	2288	–1.21	1702	1.61	2550	–1.19	1658	–9.05
1933	2385	13.03	2500	9.27	1722	1.18	2702	5.96	1590	–4.10
1934	2443	2.43	2725	9.00	1792	4.07	2988	10.61	1593	0.19
1935	2598	6.34	2776	1.87	1900	6.03	3093	3.49	1597	0.25
1936	2585	–0.50	2797	0.76	1931	1.63	3279	6.02	1625	1.75
1937	2799	8.28	3031	8.37	2019	4.56	3441	4.95	1915	17.85
1938	2745	–1.93	3099	2.24	2057	1.88	3589	4.31	2182	13.94
1939	ND	ND	3132	1.06	1971	–4.18	3408	–5.06	ND	ND
1940	ND	ND	ND	ND	1724	–12.53	3220	–5.50	ND	ND

Sources: Klimantas (2023); Valge (2003); MPD (2013), own calculations.

So according to our data (see also the visualisation of the GDPpc data in the Graph 1), among the five countries under comparison, during the GD real GDPpc contracted most in Poland, decreasing in 1932 to 78.3% of the 1929 level, and recovering to this level only in 1938 (in 1933–1935 was near stagnation with very small growth rates). Latvia was next, its GDP decreasing to 90.15% of the top pre-crisis level (in 1930) in 1932 and fully recovering in 1934. Estonia suffered only slightly less, with its GDP decreasing to 90.56% of the top pre-crisis level (1930 = 100%) by 1932 and fully recovering already in 1933. In Finland (1929 = 100%) GDPpc did fall to 93.85% in 1932 and completely recovered in 1934. Surely, these figures pale compared to the US, which was the hotbed of the GD. In 1935, its GDP was 69.24% of the 1929 level, surpassing it only in 1940 (MPD, 2013).



Graph 1. GDP *per capita* in the Baltic countries, Finland and Poland, 1919–1940

Sources: Klimantas (2023); Klimantas *et al.* (2023); Valge (2003); MPD (2013).

But indeed, the most puzzling finding is that in Lithuania, after 1928, there has been no single year with negative growth of the real GDPpc.

Peculiarities of the GD in Lithuania

This does not mean that Lithuania avoided the crisis. According to our data (see: Table 2), deflation in Lithuania was the deepest among all three Baltic countries, with retail prices in 1935 making out 39.5% of the 1928 level. It could be even deeper than in Poland (although comparability is limited by the application of different indexes), where in 1935, the year of deepest deflation in this country, the wholesale prices made out 53% of the 1928 level.

Table 2. The movement of the prices in Baltic countries, Finland and Poland in 1929–1939

	Lithuania		Latvia		Estonia		Finland		Poland
Year	Retail prices index, 1928 = 100%	Living cost index, 1928 = 100%	Wholesale prices in Riga index, 1928 = 100%	Food products retail prices in Latvia index. 1928 = 100%	Wholesale prices index, 1928 = 100%	Cost of living index, 1928 = 100%	Wholesale prices index, 1928 = 100%	Cost of living index, 1928 = 100%	Wholesale prices index, 1928 = 100%
1920	ND	ND	ND	94.4	ND	ND	106.19	75.8	ND
1921	ND	ND	ND	86.9	ND	75.9	114.15	94.3	ND
1922	ND	ND	95.3	74.2	93.4	81.3	115.62	91.9	ND
1923	ND	ND	98.4	78.3	94.2	91.1	99.12	92.7	ND
1924	101.2	101.2	101.6	85.7	95.9	83.9	99.12	94.3	ND
1925	108.7	110.2	98.4	94.6	102.5	95.5	101.77	98.4	ND
1926	99.9	104.0	92.2	91.2	94.2	94.6	98.23	96.0	ND
1927	100.1	103.8	93.8	91.8	94.2	93.8	99.12	97.6	ND
1928	100.0	100.0	100.0	100.0	100.0	100.0	100.00	100.0	100.0
1929	96.5	98.0	93.0	112.2	96.7	104.5	95.58	99.2	96.3
1930	80.8	87.5	79.1	95.9	84.3	92.9	87.62	91.2	85.5
1931	70.1	81.8	65.9	68.0	75.2	89.3	82.32	83.9	74.6
1932	56.8	69.2	65.9	51.7	68.6	83.9	88.51	83.1	65.5
1933	47.9	59.8	65.1	53.1	70.2	78.6	87.62	80.6	59.0
1934	45.3	55.8	64.3	51.7	70.2	77.7	87.62	79.8	55.7
1935	39.5	48.9	67.4	48.3	69.4	78.6	88.51	80.6	53.0
1936	41.1	49.7	70.5	51.0	75.2	87.5	91.16	80.6	53.6
1937	47.9	54.8	87.6	61.2	83.5	92.9	107.96	84.6	59.3
1938	48.2	55.8	87.6	67.3	82.6	98.2	100.88	87.1	ND
1939	50.5	58.8	91.5	68.0	85.1	100.0	106.19	88.7	ND

Sources: Hjerppe (1989, p. 278); Knakiewicz (1967, p. 137); Norkus, Ambrulevičiūtė, Markevičiūtė, Morkevičius, Žvaliauskas (2022a; 2022b; 2022c; 2022d); Vaskela (2023a; 2023b).

Therefore, while real GDP did continue to grow, nominal GDP (or GDP at current prices) did contract (similarly to some other European countries) by more than 50% (1930 = 100%) by 1935, which was the year with the most considerable deflation in Lithuania. Lithuanian GDPpc at current prices (i.e., nominal GDP) decreased from 1197 Litas (Lt – Lithuanian national currency) *per capita* in 1929 to 589 Lt in 1935 m. Lt, i.e., 2.03 times. However, in 1935, the purchasing power of Litas 2.45 times exceeded its level in 1929. Therefore, real GDPpc in 1935 by 21% exceeded the 1929 level.

Lithuania did not avoid the crisis because most of its population suffered. The two most affected population groups were farmers (up to 75% of the employed population) and debtors. All farmers suffered because of "price scissors:" the prices of agricultural output decreased more than those of manufacturing, reducing the purchasing power of farmers. The farmer's situation was the same in all comparator countries. Farmers had to sell more to maintain the same consumption level and get production inputs. Debtors did suffer because debts were not denominated according to the inflation rate. So, the worst sufferers were indebted farmers, who needed to sell 2–3 times more to service their debts.

The annual number of forced auctions in 1932–1935 increased up to three times, in comparison with pre-crisis years (Lietuvos Bankas, 1939, p. 3), with indebted farms as the foremost target. In the late summer of 1935, farmers of South-Western Lithuania (Suvalkija) did riot, blocking the roads and clashing with police. Their demands included a moratorium for repaying debts, stopping auctions, and an increase of prices for agricultural products (Černevičiūtė, 2013).

In the economically advanced industrial countries, most painful crisis experience was mass unemployment, with industry workers as main victims. In the U.S, unemployment did rise to 25% of total workforce, and in Germany it was on similar levels (Feinstein, Temin, Toniolo, 2008). In Lithuania, national statistical office did start to publish unemployment statistics only since 1936. It did cover only cities, Therefore, for the GD years, we can only use data from miscellaneous sources (mainly contemporary press), compiled and processed in recent Lithuania dissertations (Černiauskas, 2014; Andrijauskaitė, 2017).

Like in the pre-crisis years, most urban unemployed were construction workers. Their unemployment was seasonal, with peak in January and Feb-

ruary, and ebb in June–July. Contemporary observers report the increase of the winter months' levels of seasonal unemployment during the Great Depression years in larger cities (Kaunas, Klaipėda, Šiauliai), explaining it by immigration of agricultural workers from countryside, whose wages did suffer from decrease of the agricultural products prices (Barkauskas, 1932; Černiauskas, 2014).

Taking examples from foreign countries, since 1933, Lithuanian municipalities organized public works. However, only unemployed with residential qualification of life in a city from one half to three years (depending on city) did qualify for employment at public works (Polkaitė-Petkevičienė, Černiauskas, 2017, p. 71). Sources report strikes and other industrial conflicts caused by the efforts of employers to cut wages. Indeed, nominal wages did decrease (Andrijauskaitė, 2017, pp. 107–110). However, as far as food expenditure did make more than 50% of total expenditure in the urban worker households, due to the drastic decrease in food prices, real wages did increase even in the construction sector, which was most severely affected by the crisis (Norkus, Ambrulevičiūtė, Markevičiūtė, 2019).

The industry workers' situation could be more difficult in comparator countries just because they were more urbanized and had greater manufacturing sectors. In Estonia, Latvia and Finland, both the closing of factories and the increase in unemployed numbers are reported by national statistics. In Latvia, in 1930–1932 urban employment decreased by some 22%, making in 1932 the 78% of 1930 level (Valsts statistiska…, 1936, p. 43). The situation in Poland's industrial regions was even more difficult. According to Koryś (2018, p. 139), at the peak of the GD in Poland up to 500,000 industrial workers could be unemployed. To understand the meaning of this number, according to Poland's population census in 1931, industry and mining employed 2,000,000 persons Koryś (2018, p. 139).

The workers of the public sector, receiving fixed salaries, were winners because deflation increased their real wages. Nevertheless, there was diffuse discontent among them over the decrease in economic welfare too, because, according to legislation in power since May 1, 1932, all Lithuanian state employees with monthly salaries of more than 150 Litas had to pay extraordinary "budget-balancing tax" (Mikalauskas, 2007, pp. 64–65). This tax was progressive and was differentiated territorially as well as according to family

status (officials working and living in the province and singles had to pay more). In 1935, state officials were nudged to buy bonds of the domestic loan to fight the crisis.

How Lithuania's economy could growth despite the deflation?

In our putative explanation of Lithuania's economic growth despite the deflation and contraction of the economies of its neighbors and main foreign trade partners (Germany and the UK), we would like to single out three factors. Firstly, in Lithuania's case, we do not observe a "boom, then bust" pattern, typical for the economic crisis. In this pattern, the contraction of an economy during the recession is preceded by the phase of very rapid growth (up to two-digit annual growth), driven by domestic or foreign credits, and leading to its overheating. The symptoms of overheating are inflation, foreign trade, and current account deficit, and high foreign and domestic private and public debt (Blanchard, 2019).

According to Norkus and Markevičiūtė (2021), Lithuania was the first among Baltic countries to recover from the destruction of WWI. Its advantages were an influx of remittances and capital from the U.S. (emigrants were returning in large numbers) and the monetary union with Germany until the outbreak of hyperinflation in the late Summer of 1922. There was indeed a boom in 1920–1923. However, after Lithuania's introduction of its own currency and interruption of trade with Germany during its hyperinflation, Lithuania suffered from a prolonged crisis, with its GDP decreasing in 1924–1926 (see: Table 1).

This crisis did not end with Germany's economic stabilization since 1924, because Germany switched to agrarian protectionist policies. Only the continuing flow of remittances from the Lithuanian emigrants in the U.S. helped the Lithuanian government to maintain a positive payment balance. Strong growth in 1929–1930 was recovery growth from the preceding depression rather than a boom during the new business cycle. In fact, in 1930, Lithuania's GDP was still below the 1923 level.

Secondly, Lithuania was the least crisis-vulnerable among all the countries we compared. We draw on the distinction between vulnerability and

resilience to exogenous economic shocks, made by Lino Briguglio, Cordina, Farrugia, and Vella (2009) and Briguglio (2016), who applied it in the comparative research on small economies. They define vulnerability "as the exposure of an economy to exogenous shocks, arising out of economic openness, while economic resilience is defined as the policy-induced ability of an economy to withstand or recover from the effects of such shocks" (Briguglio, Cordina, Farrugia, Vella, 2009, p. 239). According to Briguglio's argument, very vulnerable economies (e.g., Singapore in our times) can be highly resilient due to smart government macroeconomic policies, rapidly recovering aftershock, while recovery of much less vulnerable economies may be delayed by the inadequate policies (e.g., U.S. economy during the Great Depression).

According to Briguglio, the most important indicator of the national economy's vulnerability to exogenous economic shocks is its openness, measured by the relation of export to GDP (E/GDP) or the relation of the sum of export and import to GDP (E+I/GDP). Lithuania was the least open Baltic economy. Its interwar period top value of the openness index (relation of export and import sum to total GDP) was 25.98% in 1930 (on the eve of GD). Latvia's (49.23% in 1929) and Estonia's (51.81% in 1928) top values were nearly twice as large. Mean values with all data available for calculations are as follows: Lithuania (1920–1939): E/GDP = 9.60, E+I/GDP = 18.88; Latvia (1920–1939): E/GDP = 13.93%, E+I/GDP = 30.32; Estonia (1923: E/GDP = 19.63%, E+I/GDP = 39.39; Finland (1919–1939): E/GDP 23.55% E+I/GDP; 47.47% (see: Norkus, Markevičiūtė, Ambrulevičiūtė, 2025; Vattula, 1983).

For Poland, we could obtain all data necessary to calculate E/GDP and E+I/GDP ratios only for 1929–1936 period (from Kubiczek, Wyczanski, 2006; Lethbridge, 1985, p. 571). So, in 1929, their values were maximal (E/GDP = 10.82, and E+I/GDP = 22.78), while mean values for 1929–1938 were E/GDP = 8.65% and E+I/GDP = 16.48%. So, taking the results at face value, Poland was the most closed and least vulnerable economy. However, Briguglio recommends applying these indicators only to small economies, and here, the differences in the territory and population sizes of Poland on one side and the remaining countries under comparison impose limits on the usefulness of this measure. With 32,107,000 population (according to the 1931 population census; Mitchell, 2007, p. 6), Poland was a real giant in comparison with

our other countries, and it is known that the openness of the economy is negatively related to the population size.

This is relevant to interpreting also the finding that Estonia's economy was most open. It should be taken into consideration that Estonia was the smallest among Baltic countries according to N of the population (1,116,000 as of 1930), Latvia second largest (1,910,000), and Lithuania the largest (2,354,000) (Norkus, 2021a; 2021b). This may explain why in Estonia, the value of this index never was below 22.00% (1932), while in Latvia, it did fall to 16.96% in 1934, although both countries were very similar in terms of economic structure (Vaskela, 2022). Nevertheless, population size was not the main factor accounting for differences in the openness of Baltic economies, because Finland's economy was more open, although its population (3,463,000 in 1930) was larger (Mitchell, 2007, p. 4).

We would like to conceive vulnerability broader, including variables describing the macroeconomic (dis)equilibrium of a small country at the time it suffers an external shock. They include foreign trade balance deficit, fiscal deficit, the size of public debt, the prevalent share of only a few commodities in the export revenue, and dependence from only a few foreign partners for import and export. Usually, economies are in disequilibrium during the boom (overheating) phases of the economic cycle. So paradoxically (but pertinently to our case) rapidly growing countries are more vulnerable. As far as Lithuania's economy did not "boom" by 1929, when the GD did break out, it displayed all standard features of macroeconomic stability: Lithuania had a balanced government budget, positive foreign trade, and current account balances.

A remarkable feature of Lithuania was very small public debt (by debt/GDP ratio). Estonia and Poland were most heavily indebted, Finland was next, followed by Latvia. This is important because during crisis years, the burden of servicing debt increased. After all, nominal GDP decreased, but debt was not denominated in real terms. As far as state revenue decreases during the crisis, for heavily indebted states the sole solution may be defaulting on their debts.

The third factor that should be taken into consideration in explaining Lithuania's growth performance is crisis management, accounting for its

greater crisis resilience. The relative closedness of the Lithuanian economy was no creation of the self-conscious policies of the Lithuanian government. It was just an effect of the economic underdevelopment of Lithuania as the legacy of Russian rule, which was very different from that received by Estonia and Latvia, which belonged to most advanced regions of the Russian empire (see Norkus, Markevičiūtė, 2021). Lithuania just had very few commodities to sell on competitive foreign markets.

The paramount aim of Lithuanian government was to build up its export basis, making it more open and less dependent on Germany. A happy coincidence, which did provide resources to start the work at the realization of this aim, was the reception of large (measured by the scales of the Lithuanian economy) foreign loan on very favorable conditions. It was provided by the Swedish Ivar Kreuger concern in exchange for monopoly rights of producing and selling matches in Lithuania (Grigaravičiūtė, 1996).

Kreuger's concern had analogous deals with most East European countries, including Estonia and Latvia, where Swedish match monopoly was obtained since 1928. So, by 1930–1931, their governments had already spent this money. Poland received two loans ($6 mil. in 1925 and $32.4 mil. in 1930) from Kreuger, but it was used very differently from Lithuania. Poland used a second loan to increase the reserves of the Central Bank and ensure free convertibility of zloty, which survived until 1936.

Lithuanian government invested the loan into the build-up of a food industry capable of processing primary products (pig meat and milk) into food products, sellable at the more demanding markets (first of all, British) markets. A network of modern dairies producing exportable butter, slaughterhouses, producing bacon, and refrigerators was created. So, in 1930–1932 Lithuania did something like what Poland was done in 1936–1938 under Minister of Finance Eugeniusz Kwiatkowski, who initiated the creation of the Central Industrial District (*Centralny Okręg Przemysłowy* – COP) (see e.g. Koryś, 2018, pp. 239–240; Samecki, 1998). If Poland had conducted Lithuanian policies of 1930–1932, it should have started a project like creating the COP already in 1930–1931.

These investments worked as a "big push," providing for Lithuanian manufacturing an impulse (due to the "multiplicator effect") that ensured

its growth also in later years after Kreuger's loan was spent. Indeed, according to Klimantas's (2023) sector-by-sector analysis of the growth Lithuanian economy, the manufacturing sector was the most resilient (in conspicuous contrast to neighbor countries). For agriculture, forestry, and fishing, Klimantas registered a volume decrease in 1930–1931, but this change may be related not to the crisis but to weather because 1930 is known as a very good cereals harvest year, while in the next year, there was harvest failure. In 1931–1937, the output volume of this sector did only increase.

Concluding remarks

These hypotheses about the causes of Lithuania's economic growth during the GD advanced in the third section of the main part need testing and suggest directions for further research, which should also include the cross-checking of the Klimantas (2023) results by application of other methods of the GDP measurement methods: income and expenditure. An important task of further research is also the re-estimation of the GDP of Estonia, including the extension of the GDP data series to the early 1920s and to 1939. Of particular importance is filling out the GDP data series for Poland for 1920a and re-estimation for 1929–1938, applying one of the direct measurement methods.

Poland's GDP values for this period in the international $ were derived by Angus Maddison himself based on Laski (Laski, 1956, pp. 56–90). However, in addition to these estimates, there are five other estimates: by Knakiewicz (annual series for 1929–1936), C. Klarner (annual series for 1929–1936), Kalecki and Landau (for years 1929 and 1933), Polish National Statistical Office from interwar time (for 1929, 1935 and 1937), and the Section of Economic Sciences of the Polish Academy of Science from the postwar years (annual series for 1929–1938) (Kubiczek, Wyczanski, 2006, p. 637). Due to methodological differences, they widely differ. Best way to resolve these differences is to estimate GDP from primary sources in the contemporary SNA framework. Until this work will be done all conclusions about Poland's growth performance and international standing in the GDP ranking can be only preliminary or tentative.

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